CLAIMS

What is claimed is:

1. An interbody fusion spacer, comprising:

an elongated body having a first end, a second end, an outer surface and a side wall connecting said first end and said second end, said elongated body defining an interior cavity;

at least one of said first end and said second end having an end wall discontinuity configured for nesting with an adjacent spacer; and

said side wall defining a side wall opening to said interior cavity in a side of said elongated body.

2. The spacer of claim 1, wherein said body is comprised of metal.

3. The spacer of claim 1, wherein said body is generally cylindrical in shape.

4. The spacer of claim 1, wherein said outer surface defines threaded bone-engaging portions.

5. The spacer of claim 1, wherein said side wall defines a plurality of openings for bone ingrowth extending from said outer surface into said internal cavity.

6. The spacer of claim 1, wherein one of said ends comprises a tool engaging end defining a tool engaging hole for receiving a driving tool for implanting the spacer.

7. The spacer of claim 1, further comprising an osteogenic material disposed within said cavity.

8. The spacer of claim 7, wherein said osteogenic material comprises demineralized bone, a calcium phosphate material, a bioceramic, bioglass, an osteoinductive factor and mixtures thereof.

9. The spacer of claim 1, wherein said side wall opening is defined by a side wall discontinuity in said side wall that extends over at least about 10% of the circumference of said body but not exceeding about 50% of the circumference of said body.

10. The spacer of claim 9, wherein said side wall discontinuity extends over at least about 20% of the circumference of said body but not exceeding about 40% of the circumference of said body.

11. The spacer of claim 1, wherein said side wall opening is defined by a side wall discontinuity that extends over at least about 50% of the length of said body.

12. The spacer of claim 11, wherein said side wall discontinuity extends over at least about 80% of the length of said body.

13. The spacer of claim 1, wherein said side wall opening is sized to allow passage of osteogenic material into said interior cavity.

14. The spacer of claim 1, wherein said end wall discontinuity defines a concave surface.

15. The spacer of claim 1, wherein said end wall discontinuity is configured for nesting with an adjacent spacer.

16. The spacer of claim 1, comprising a side wall discontinuity aligned with said end wall discontinuity, said side wall discontinuity extending along the length of said body to define said opening in a side of said body.

17. The spacer of claim 1, having a concave end wall discontinuity at each of said first and second ends, and wherein each of said ends is configured to receive an outer convex surface of an adjacent spacer.

18. The spacer of claim 1, wherein each of said ends are configured for nesting with an adjacent spacer to form a spacer assembly having a width less than the sum of the combined maximum diameters of said spacers.

19. An interbody fusion spacer, comprising:

an elongated body having a circumference, a first end defining a first end wall, a second end defining a second end wall, an outer surface and a side wall connecting said first end and said second end, said elongated body defining an interior cavity, at least one of said end walls having a discontinuity configured for nesting with an adjacent spacer, said side wall defining a discontinuity extending along a length of said body, said discontinuity in said side wall defining an opening in communication with said interior cavity, said discontinuity in side wall being at a location corresponding to said discontinuity in said end wall, and said discontinuity in said end wall and said discontinuity in said side wall both extending about said circumference of said body to substantially the same extent.

20. An interbody fusion implant system, comprising:

a first interbody fusion spacer having a first elongated body having a first end, a second end, an outer surface and a side wall connecting said first end and said second end, said elongated body defining an interior cavity;

at least one of said first end and said second end having a discontinuity configured for nesting with an adjacent spacer,

said side wall defining an opening to said interior cavity in a side of said elongated body, said opening configured for loading said interior cavity with an osteogenic material; and

a second interbody fusion spacer having a second elongated body, said second elongated body having a third end, a fourth end, a second outer surface and a second side wall connecting said first end and said second end, said second interbody fusion spacer nestable within said first interbody fusion spacer.

21. The implant system of claim 20, wherein said first and second elongated bodies are comprised of metal.

22. The implant system of claim 20, wherein said first and second elongated bodies are generally cylindrical in shape.

23. The implant system of claim 20, wherein said first and second outer surfaces each independently define threaded bone-engaging portions.

24. The implant system of claim 20, wherein each of said elongated bodies further include a plurality of openings for bone ingrowth.

25. The implant system of claim 20, wherein one of said ends of said first body and one of said ends of said second body comprise a tool engaging end defining a tool engaging hole for receiving a driving tool for implanting the spacers.

26. The implant system of claim 20, further comprising an osteogenic material disposed within said first interior cavity.

27. The implant system of claim 26, wherein said osteogenic material comprises demineralized bone, a calcium phosphate material, a bioceramic, bioglass, an osteoinductive factor and mixtures thereof.

28. The implant system of claim 20, wherein said opening is defined by a discontinuity in said side wall over at least about 10% of the circumference of said body but not exceeding about 50% of the circumference of said first body.

29. The implant system of claim 28, wherein said discontinuity extends over at least about 20% of the circumference of said body but not exceeding about 40% of the circumference of said first body.

30. The implant system of claim 20, wherein said opening is defined by a discontinuity in said side wall extending over at least about 50% of the length of said first body.

31. The implant system of claim 30, wherein said discontinuity extends over at least about 80% of the length of said first body.

32. The implant system of claim 20, wherein said opening is sized to allow passage of osteogenic material into said first interior cavity.

33. The implant system of claim 20, wherein said second elongate body defines a second interior cavity.

34. An interbody fusion implant system, comprising:

a first interbody fusion spacer having a first elongated body, said first elongated body having a circumference, a first end defining a first end wall, a second end defining a second end wall, a first outer surface and a first side wall connecting said first end and said second end, said first elongated

body defining a first interior cavity, at least one of said end walls having a discontinuity configured for nesting with an adjacent spacer, said discontinuity extending along a length of said body and into said side wall, said discontinuity in said side wall defining an opening in communication with said first interior cavity, said side wall having said discontinuity and said end wall having said discontinuity both extending about said circumference of said body to substantially the same extent; and

a second interbody fusion spacer having a second elongated body, said second elongated body having a third end, a fourth end, a second outer surface and a second side wall connecting said third end and said fourth end, said second interbody fusion spacer nestable within said first interbody fusion spacer.

35. The implant system of claim 34, wherein at least one of said ends of said first interbody fusion spacer and said second interbody fusion spacer comprise a tool engaging end defining a tool engaging hole for receiving a driving tool for implanting the spacers.

36. The implant system of claim 34, wherein said first interbody fusion spacer and said second interbody fusion spacer are comprised of metal.

37. The implant system of claim 34, wherein said first elongated body has a first plurality of openings for bone ingrowth extending from said first outer surface into said first internal cavity,

38. A spacer insertion tool, comprising:

a housing having a proximal end and an opposite distal end and defining a passageway between said proximal end and said distal end;

a shaft having a first end and an opposite second end, said shaft disposed within said passageway with said first end adjacent said distal end, said first end defining a spacer engager; and

an occlusion member extendible from said distal end of said housing for blocking an opening defined in the spacer when said spacer engager is engaged to the spacer, said occlusion member having an interior and exterior surface, at least one of said surfaces of said occlusion member being curved.

39. The spacer insertion tool of claim 38, wherein both of said surfaces of said occlusion member are curved.

40. A method of promoting fusion bone growth in the space between adjacent vertebrae, comprising:

(a) providing a first interbody fusion spacer having a first elongated body, said first elongated body having a first end, a second end, a first outer surface and a first side wall connecting said first end and said second end, said elongated body defining a first interior cavity;

at least one of said first end and said second end having a discontinuity configured for nesting with an adjacent spacer;

said first side wall defining an opening to said interior cavity in a side of said first elongate body;

a second interbody fusion spacer having a second elongated body, said second elongated body having a third end, a fourth end, a second outer surface and a second side wall connecting said first end and said second end, said second interbody fusion spacer nestable within said first interbody fusion spacer;

(b) preparing said adjacent vertebrae to receive the elongated body in an intervertebral space between adjacent vertebrae; and

(c) placing the first elongated body into the intervertebral space.

41. The method of claim 40, further comprising packing osteogenic material into said interior cavity of said first spacer prior to the placing step.

42. The method of claim 40, further comprising implanting a second spacer into the intervertebral space after the placing step.

43. The method of claim 42, further comprising orienting said second spacer so that it nests within said first spacer.

44. The method of claim 40, wherein said first and second interbody fusion spacers are comprised of metal.

45. The method of claim 40, wherein said first elongated body has a first plurality of openings for bone ingrowth extending from said first outer surface into said first interior cavity.

46. A method of promoting fusion bone growth in the space between adjacent vertebrae, comprising:

(a) providing a first interbody fusion spacer having a first elongated body, said first elongated body having a circumference, a first end defining a first end wall, a second end defining a second end wall, a first outer surface and a first side wall connecting said first end and said second end, said first elongated body defining a first interior cavity, at least one of said end walls having a discontinuity configured for nesting with an adjacent spacer, said discontinuity extending along a length of said body and into said side wall, said discontinuity in said side wall defining an opening in communication with said first interior cavity, said side wall having said discontinuity and said end wall having said discontinuity both extend about said circumference of said body to substantially the same extent;

(b) preparing said adjacent vertebrae to receive the elongated body in an intervertebral space between adjacent vertebrae; and

(c) placing the first elongated body into the intervertebral space.

47. The method of claim 46, further comprising packing osteogenic material into said interior cavity of said first spacer prior to the placing step.

48. The method of claim 46, further comprising implanting a second spacer into the intervertebral space after the placing step.

49. The method of claim 48, further comprising orienting said second spacer so that it nests within said first spacer.

50. The method of claim 49, wherein said first and second interbody fusion spacers are comprised of metal.

51. The method of claim 50, wherein said first elongated body has a first plurality of openings for bone ingrowth extending from said first outer surface into said interior cavity.

52. An interbody fusion spacer, comprising:

an elongate body having end walls and a side wall extending between said end walls, said side wall and said end walls defining an interior cavity;

said end walls each having an external profile comprising a first portion defining an arc of a circle, said arc extending from 180° to 324° around the circle; said external profile also comprising a second portion defining a concave surface;

said side wall having an external profile defining an arc of a circle, said arc extending from 180° to 324° around the circle and aligned with the arc defined by said end walls.

53. An interbody fusion spacer, comprising:

an elongate body having end walls and side walls extending between the end walls, said end walls and side walls defining an interior cavity for receiving an osteogenic substance;

said end walls non-removably fixed to said side walls; and

said side walls defining an opening configured for passage of an osteogenic substance into said cavity.

54. The interbody fusion spacer of claim 53, wherein said end walls are integral with said side walls.

55. The interbody fusion spacer of claim 53, wherein said body is a substantially cylindrical body.

56. The interbody fusion spacer of any of claims 53-55, wherein said side walls have surface features for resisting expulsion from an intervertebral space.

57. The interbody fusion spacer of claim 56, wherein said surface features comprise threads.